The Eradication of Aujeszky's Disease in the United States

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Aujeszky's Disease (Pseudorabies) was reported as a clinical disease of swine in the United States in the late 1960's. The disease continued to spread throughout the swine dense areas of the United States and also increased in its clinical severity for swine. By the mid 1970's the swine industry was asking for governmental assistance. From 1975 to 1985 State and Federal laws were established to control spread of the disease, serological tests were developed, vaccines were developed and made available, and finally pilot studies were conducted to determine the feasibility of an eradication program.

In 1987, after at least ten years of discussion, research, and trying to continue living with Aujeszky's Disease, the National Pork Producers Council voted to ask the State and Federal governments to establish a program for its eradication. The program was targeted to begin in 1989. The program was to be an industry driven program with costs shared equally between States, Federal, and Industry. The Federal government has spent 72 million dollars on the eradication program, State governments have spent as much or more, and producers have spent more. One very large producer located in an endemically infected area was spending $12.00 per breeding animal to control the disease and complete virus elimination in their herd. In 1999, additional federal funds have been made available to indemnify producers who depopulate their herds. A cost/benefit study was done which showed the disease to be costing the United States swine industry approximately thirty million dollars each year. The United States swine industry has nearly 7 million breeding animals and markets approximately 100 million swine annually.

During 1988, swine industry leaders and regulatory officials from both State and Federal agencies met on several occasions to develop Pseudorabies Eradication State-Federal-Industry Program Standards. Some changes have been made each year as recommended by the pseudorabies committee at the annual United States Animal Health Association meeting. The contents of the standards are in four parts: Part I - Definitions, Part II - Administrative Procedures, Part III - Program Stages and Requirements, and Part IV - Participation in Herd Plans and Release of Quarantines. The program stages are one of the major measures of progress. A brief outline of the program stages are as follow:

Stage I - Preparation

1. A State pseudorabies committee is functioning.
2. A surveillance program is in place.
3. States have or are seeking regulatory authority.
4. An educational program is in place.
5. Pseudorabies Quarterly Reports are being submitted.
6. Federal regulations are enforced.

Stage II - Control

1. Stage I standards are implemented.
2. States have the authority to require herd clean up on all known infected herds.
3. States have a prevalence of greater than 1 percent infected herds.

Stage III - Mandatory Herd Cleanup

1. Stage II standards are implemented
2. Epidemiology
   - A. Tracing into and out of infected herds is occurring.
   - B. Circle testing within 1.5 mile of infected herds is occurring.
   - C. States have a prevalence of 1 percent or less infected herds.

3. Surveillance
   - A. At least 10 percent of the breeding swine population is surveyed annually with at least 80 percent successful traceback to the farm of origin.
     - Testing must be random so that all herds will eventually be surveyed.
     - States may use on farm testing, first point of concentration testing (markets), or collection of samples at slaughter.
4. Monitored status is given to all feeder pigs.

Stage IV - Surveillance

1. State has no known infection.
2. No new cases confirmed within 1 year of application.
3. States maintain surveillance as in Stage III.
4. Monitored status established on all feeder pigs.
5. Breeding swine can move without a test.

Stage V - Free

1. State has been Free for 1 year since recognition of Stage IV.
2. Surveillance can be reduced by one-half.
3. Feeders and breeders can move without a test.

By 1991 all States had proceeded beyond the organizational phase and were aggressively looking for infected herds while implementing herd plans to accomplish release of quarantines (herd cleanup). During 1992 the number of quarantined herds peaked at just under 8,000 herds. Since that time, herds have been released in greater numbers than those placed under quarantine. Approximately 20,000 herds have been released from quarantine through the efforts of this program. On June 1, 1999, States still reported 715 quarantined herds in the United States. All remaining quarantined herds are on an accelerated cleanup program by test and removal of all test positive animals or by depopulation of entire infected units. Producer incentives are now available from the federal government and from some State governments. Our goal is to have removed all test positive animals by the end of 1999, and to have all States in Stage IV or higher by the end of year 2000. Currently, there are 32 States in Stage V (Free) status, 8 States in Stage IV (no infection) status, 9 States in Stage III status, and 3 States in Stage II/III status.

Prior to the accelerated program that was initiated in 1999, the program in the United States progressed in a variety of ways that were specifically designed to fit the needs of each individual infected herd. Some plans were very simple and only entailed a test and removal of a few positive animals, or a depopulation of the infected herd, but for the most part, a total herd health plan was developed that could take from 2 to 3 years to eliminate the virus. These plans usually involved a 5 step program and improved bio-security of the herd. The 5 steps are:

1. Enhancing the immunity of the herd

   Vaccinated pigs or breeders have some protection against the disease (although not complete), are usually protected against clinical symptoms, and perhaps most important they do not shed as much virus as the unvaccinated if infected.

   A. Vaccinate all breeding stock at least twice a year with a MLV vaccine that has a differential test. Up to four vaccinations are indicated in infected herds.

   B. If the finishing herd is infected or at considerable risk of becoming infected, vaccinate all pigs at 8-12 weeks of age. The use of intranasal vaccine at a very young age and repeated with the intramuscular vaccine at 8-12 weeks has been used successfully in many herds.

   C. All replacement gilts should be revaccinated at gilt selection and again pre-farrowing (should have at least three doses before first farrowing). Purchased replacements should be vaccinated on arrival. Repeat vaccination in 3-4 weeks and again pre-farrowing.

2. Plan a segregation system (Bio-Security)

   All-In/All-Out is the ideal system throughout the entire production unit. Segregated early weaning (SEW) and multi-site production systems have been very beneficial. Pigs should be weaned no later than 3 weeks of age. When you can't have the ideal, do the next best thing. You **must keep clean animals separate** from the infected animals. This can be done in pens, lots, and a variety of ways that can be implemented on a farm.

3. Reduce stress

A. Stressed animals are more likely to shed the virus.

B. Stressed animals that are not infected are more susceptible and thus more likely to become infected.

C. Uncomfortable swine are under stress. OVERSTOCKING PENS IS ONE OF THE MOST COMMON STRESSORS. The following stocking density guidelines should be followed if you want maximum performance from your pigs:

Space Per Pig

Weight	Square feet
15 - 30lbs.	1.7 - 2.5
30 - 60lbs.	3 - 4
60 - 100lbs.	5
100 - 150lbs.	6
150 - 220lbs.	8
220+ lbs.	8+

In the winter adding another pig or two to the same size finishing pen helps pigs stay warm and may improve performance. The reverse is true for hot summer months. For growing and finishing pigs raised in a building with an outside apron, allow six square feet per pig, both inside and outside the building.

D. Avoid environmental stressors.

E. Avoid dietary stressors.

F. Minimize back sorting or changing of pens.

G. Keep breeding animals penned according to age and size.

4. Monitor the herd

You have to test some animals periodically to know how well you are progressing.

Monitor all finishers at least twice a year during the cleanup phase. A random test of 5- 15 head of near market weight animals is all you need.

Monitor all replacement gilts. Only negative gilts should be added back to the herd. Continue to monitor some of the gilts after they farrow to see if they are remaining negative.

5. Rotate the old breeding stock

Keep the known infected stock only long enough to maintain production while the new clean herd is being assembled. Keep them vaccinated and free of stress and most will not shed the virus.

(Don't gamble on this any longer than you have to). A test and removal program that removes test positive sows following weaning their litter has proven successful in many herds. When testing indicates that all positives have been removed, initiate whole herd testing to release the quarantine.

By approaching Aujeszky's Disease eradication from a swine farm management herd health program viewpoint the producer acceptance was greatly increased. Not only has the program been successful in eradicating Aujeszky's Disease from nearly 20,000 swine farms, it has contributed to the overall management skills in high health status swine production in the United States. Many other swine diseases have been eliminated during this program. Producers have reported finishers reaching market weight in less time, with less medication, with less feed consumed, and with increased profits from their swine operations. It appears that Aujeszky's Disease will be eradicated from the United States swine herds within the targeted time frame and the program will have made a significant contribution toward improved swine health and swine farm management in the United States.

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